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Abstract

U.S. OPERATIONAL EXPERIENCE IN RADIOACTIVE WASTE MANAGEMENT (1958-1963)

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Although the nuclear energy industry in the United States is relatively still in its infancy, significant strides have been made during the past six years in the radioactive waste management field to further reduce the volumes and quantities of radioactive material being discharged to our environment. The initial operation of central station nuclear power reactors during this period has resulted in waste quantities amounting to only a few per cent of original design estimates. Power reactor waste management systems have performed with no major operating difficulties and radioactivity concentrations in plant effluents have ranged between 1-3 per cent of internationally accepted radiation protection standards.

Operating experience and data from waste management systems at United States atomic energy facilities such as national laboratories, production sites, reactor testing facilities, and nuclear power reactor installations, are summarized. The efficiency of various treatment systems for large-volume low-activity waste from these operations is evaluated. Recent experience on tank storage of smaller-volume, high-activity waste is briefly discussed, and new management techniques for reducing future tank storage requirements are described.

Ground disposal experience and practice in the United States, which is utilized for certain types of solid and liquid waste effluents, are discussed. Industrial interest in providing waste disposal services for large volumes of solid, low-hazard potential waste continues to increase in the United States. Land burial and sea disposal operations during the past six years are discussed and the recent opening of commercial land burial facilities is noted.

Limited cost data on radioactive waste management systems in the U.S. are presented. Capital costs for water-type power reactors range between 3 to 5 per cent of total plant costs; operating and maintenance costs for waste handling have ranged between 5 and 10 per cent of over-all plant operation and maintenance costs. On the basis of operating cost data and experience at large U.S. nuclear research laboratories and production facilities, it is firmly believed that waste management operations will not be a limiting factor in the growth and development of the U.S. atomic energy industry.